

### **CIF 23-3: Space Rated High Voltage Plasma Generating Supply**

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**Activity Type:** New Start

**Primary STMD Taxonomy:** TX03.3.3 Electrical Power Conversion and Regulation

**Start TRL:** 2

**End TRL:** 2

**Executive Summary:** The use of plasma for in-situ resource utilization (ISRU) applications (such as water treatment, acid production, plant seed activation, biofilm sanitization, or waste gasification) is an active area of research at the KSC Applied Chemistry Lab (ACL).<sup>1</sup> The generation of plasma for experimentation has thus far been done with lab-rated power supplies which are unsuitable for space applications, and no suitable supply is readily available for purchase. This project tackled the development of a low TRL prototype 500 W power supply intended for generating plasma in space. The design was based on similar power electronic circuits used for electric propulsion systems and was adapted for use in ISRU applications. This technology will enable KSC's plasma-based ISRU related technologies to be demonstrated in the space environment.